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A NEW NORTH AMERICAN NOCTUID
OF THE GENUS *ANOMOGYNA*
(INSECTA, LEPIDOPTERA)

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A comparative study of the North American species formerly referred to *Anomogyna sincera* H.-S. and of essentially typical *sincera* from Sweden has revealed a number of dissimilarities. Although the two forms are indeed closely related, they are less so than many other recognized pairs of sister species, and the distinguishing characters are sufficiently well defined that it seems appropriate to describe the Nearctic one as a discrete species. There is no synonymy involved and hence no earlier name available.

Anomogyna sincera is a very rare species from Sweden and Finland. In the literature (e.g. Draudt, 1924, p. 77-78) it is reported from elsewhere in the Palaearctic Region, at least in part a result of confusion with *Anomogyna rhaetica* Stgr. Although at one time regarded as races, *sincera* and *rhaetica* are clearly distinct morphologically and apparently also by the test of sympatry in Fennoscandia. They were treated as two species at least as early as 1937 by Kozhantshikov (p. 202-203), who figured valves of the male genitalia.

The present investigation removes one species from the list of supposed holarctics but suggests that there may be others to replace it. In the description I make frequent reference to *fennica* and *conditoides*, which are *Anomogyna rhaetica fennica* Brandt, a close sympatric sibling of *A. sincera*, and *A. homogena conditoides* Benjamin of the Hudsonian zone in eastern North America. These are the closest sympatric relatives of *sincera* and its New World counterpart in Europe and North America respectively and it is possible, if not likely, that *rhaetica*, *fennica*, *homogena* and *conditoides* are all just races of one circumpolar species. That problem *per se* is not examined in the present paper.

I am greatly indebted to Dr. Carl H. Lindroth of the University of Lund for sending on loan the Swedish material. Without his cordial assistance this investigation could not have been completed.

Anomogyna fabulosa, new species

Platagrotis sincera J. B. Smith, 1893, p. 59. Dyar, 1902, p. 130.
(*nec sincera* Herrich-Schäffer, 1851, vol. 2, p. 412).

Anomogyna sincera Barnes and McDunnough, 1917, p. 47. McDunnough, 1921a, p. 84; 1921b, p. 177; 1928 [1929], p. 59-60; 1938, p. 66. Draudt, 1924, p. 77-78.

Noctua (Anomogyna) sincera Forbes, 1954, p. 64 (*partim*).

Diagnosis: A northern Nearctic (Hudsonian zone) species closely related to *sincera* but with various distinguishing characters. Forewings wider and more heavily marked; hindwings much darker than those of *sincera*, similar to those of *conditoides* and *fennica*. Orbicular and reniform spots approximate, whereas in *sincera* and other near relatives they are well separated (except perhaps in *A. mevesi* Aur., which I have not seen). Also, the reniform, which tends to be partly obscured by blackish suffusion, is quite compressed, somewhat S-shaped and oblique. Male genitalia larger and more heavily chitinized, with a spatulate rather than a simple uncus. Apex of valve produced to a blunt point, not shortened and obtusely rounded as in *sincera*. Pollex longer and stouter. Aedeagus with apical flap dentate, that of *sincera* unarmed.

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Figure 1. *Anomogyna sincera* ♂. Upland, Sweden, June 15, 1889 (J. Wermelin). In the collection of the Zoological Institute, University of Lund.

Figure 2. *Anomogyna sincera* ♂. Lidingö, near Stockholm, Sweden, June 23, 1889 (J. Österberg). In the same collection.

Figure 3. *Anomogyna rhaetica fennica* ♂. Tåsjö (Rörström River), Angermanland, Sweden, July 21, 1944 (T. Bonsson). In the same collection.

Figure 4. *Anomogyna fabulosa* n. sp. Holotype ♂.

Figure 5. *Anomogyna fabulosa* n. sp. Paratype ♀.

Figure 6. *Anomogyna fabulosa* n. sp. Paratype ♂. Near Mt. Albert, Cascapedia Road, Gaspé Peninsula, Quebec, July 13, 1950 (D. C. Ferguson).

Photographs approximately natural size.

Types: Holotype male, Jefferson Notch, at highest point on road from Jefferson to Bretton Woods, New Hampshire (elevation about 3,000 feet), June 28, 1952 (D. C. Ferguson).

Paratypes, 16 males, same locality and collector, June 28-29, 1952, June 30, 1953; one female, same locality, July 2, 1952 (Donald J. Lennox); three males, Halfway House, Mt. Washington auto road, White Mountains, N. H., June 28, 1953 (D. C. Ferguson); one male, about 60 miles up the Cascapedia Road from New Richmond, Gaspé Peninsula, Quebec, July 13, 1950 (D. C. Ferguson).

Holotype deposited in the Peabody Museum of Natural History, Yale University; paratypes in the Canadian National Collection, Ottawa, the U.S. National Museum, the American Museum of Natural History, the British Museum (Natural History), the collection of Dr. J. G. Franclemont at Cornell University, the Zoological Institute, University of Lund, Sweden, and in the collection of the author at the Peabody Museum.

FURTHER DESCRIPTION. Forewing ground color pale cinereous brown, of a decidedly grayer and more violaceous hue than *conditoides* from the same localities. New Hampshire specimens often heavily shaded with blackish brown, especially in median space, which may then contrast with the paler antemedian and postmedian areas. Canadian specimens generally lighter. Lines well defined, blackish and complete except for the postmedian, which is reduced to a very incomplete series of wedge-shaped spots, especially two strong ones opposite the cell and one or two lesser ones near the costa. Basal line single, ending at the thin but distinct basal dash. Antemedian area otherwise unmarked except for an isolated dark dot between costa and the end of the basal dash, equidistant from basal and antemedial lines. This is lacking in *sincera* and other species examined (unfortunately also in rubbed *fabulosa*). Antemedial crenate, postmedial dentate in the usual way and appearing single as in *sincera*, not double as in *fennica* and *conditoides*. There is little more than a trace of a median line or shade. Terminal line thin, dark, interrupted at the veins. Fringes concolorous with ground.

The pattern within the median space of the forewing presents some good characters. Orbicular uniformly large, contrastingly

pale (usually), variable in form but often somewhat wedge-shaped or subquadrate. The blackish shade in the cell does not run through the orbicular, but in darker specimens it does very nearly obscure the reniform. The reniform, which thus tends to be indistinct, is of an aberrant shape, being both outwardly and inwardly emarginate. The inner excavation is not opposite the outer one but at a lower plane, making the spot S-shaped, with its costal end directed obliquely toward the wing apex. *Sincera* and other allied species have a more normal reniform, emarginate on the outer side only. *Perquiritata* and *laetabilis* (the generotype) are the only other species of *Anomogyna* at hand that tend to show a similar deformity of the reniform. Also, in *fabulosa*, the reniform and orbicular are approximate or very nearly so, and this appears to be an exclusive character. Claviform usually present, as it is in the holotype, although it may be reduced or lost in the thin dark shade that connects the a.m. and p.m. lines at that point. Claviform of *sincera*, *fennica*, and *conditoides* similar, but lacking the encroaching dark shade.

Hindwings very dark, about as in *conditoides*, with a diffuse median shade and discal spot. Hindwings of *sincera* are very pale, almost without any dark scaling except for a discal spot.

Underside with pattern reduced to an even (not dentate) line, traversing both wings and strongest at the costal margins. Hindwing beneath with discal spot and usually a thin connecting basal dash. Underside of *sincera* similar but much paler and more lightly marked, with line on hindwing reduced to a trace or an incomplete series of dots.

Antennae, palpi and legs as in *sincera* but of darker coloring. Fore tibia without spines; middle and hind tibiae with two incomplete rows of weak spines. Tibial spurs much shorter than those of *conditoides*, apparently about the same as those of *sincera*. Body somewhat stouter than that of *sincera*, with thoracic vestiture decidedly hairier, most closely resembling the vestiture of *A. atrata*. Under magnification, the vestiture of the collar and tegulae appears to consist of a mixture of simple and flattened hairs, whereas *sincera*, *fennica* and most others have simple and spatulate hairs and many spatulate scales (terminology from Forbes, 1954, p. 8).

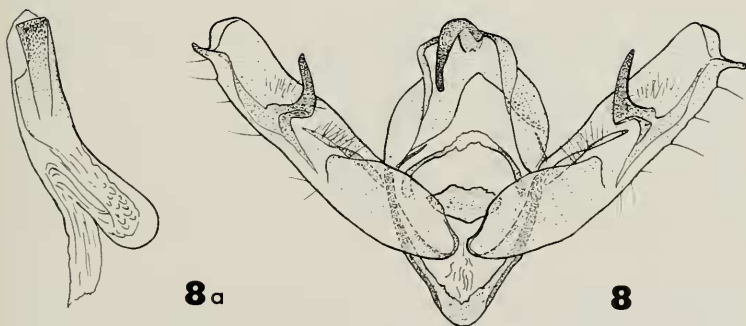
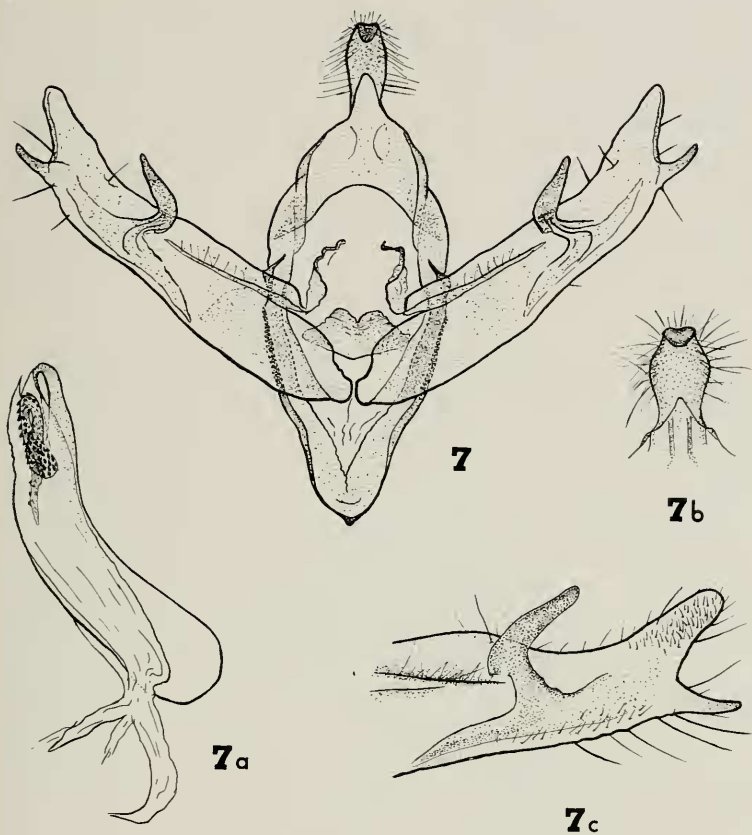
Expanse: holotype, 41 mm; others, 36-41 mm; average, 39 mm (of the two *sincera* examined, 38 and 40 mm). Average

length to width ratio of forewing, when length is measured as base to apex, and width is the perpendicular from costa through anal angle: 1.97 (of *sincera*: 2.20). This difference in width is apparent without measurement.

MALE GENITALIA (Figures 7, 7a-c). At least 25 per cent larger in all dimensions than those of *sincera* (Figures 8, 8a), the difference being quite disproportionate to wing size, in which the two species are about the same. The valvae are of different shape, as the figures indicate. The valve of *fabulosa* has a more produced and pointed apex, and a very large pollex which may equal or exceed the tip of the valve. In *sincera*, the apex is much shortened and obtusely rounded, and the pollex weaker. In *fennica* and *conditoides* the apex is similarly rounded, but extends beyond the juncture of the pollex by three times the pollex length. *Fabulosa* has a decidedly flattened spatulate uncus very different from the simple uncus of *sincera*, and the saccus is much more distended. In the aedeagus, the chitinous apical flap bears coarse scobinations and many well-developed teeth, whereas in *sincera* it was entirely unarmed in both specimens examined. In *fennica* and *conditoides* this structure is only slightly less dentate than in *fabulosa*, but the teeth are arranged differently.

FEMALE GENITALIA. Figure 9 shows the genitalia of the only female in the type series. No female of *sincera* is available for comparison, and to my knowledge the genitalia have never been figured. On comparison with those of *fennica* and *conditoides* (which appear alike), the female genitalia of *fabulosa* show an enormously thickened ductus bursae twice as wide, and a much larger bursa. The bursa contains a less coiled spermatophore of over twice the bulk of that found in the other species. The four signa are of the same type but correspondingly larger and more conspicuous.

Figure 7. *Anomogyne fabulosa* n. sp. ♂. Genitalia of the paratype shown in fig. 6. 7a. Aedeagus of the same specimen. 7b, 7c. Uncus and distal portion of valve, respectively, of a ♂ paratype from Jefferson Notch, N. H., June 28, 1952. In 7c the view is more nearly perpendicular to the inner face of the valve than in fig. 7, so that its form is less distorted by foreshortening. Figure 8. *Anomogyne sincera* ♂. Genitalia of the specimen shown in fig. 1. 8a. Aedeagus of the same specimen. All drawings to the same scale except 7b and 7c, which are somewhat larger.



MATERIAL EXAMINED: 31 males, 2 females; slides: 2 males, 1 female.

DISTRIBUTION AND HABITAT. White Bay, Birchy Stream and Hopedale (Labrador), Newfoundland; collecting stations at 49

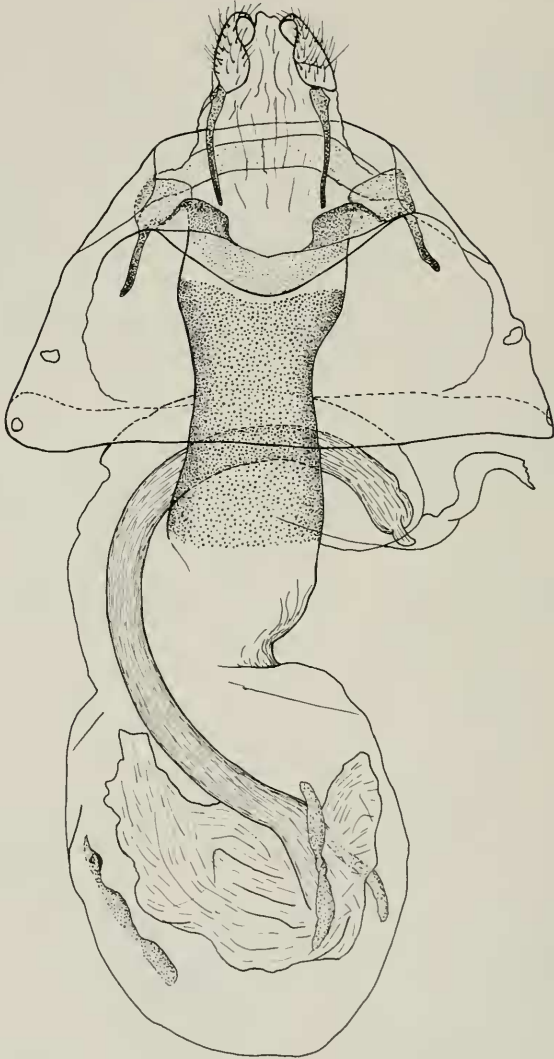


Figure 9. *Anomogyna fabulosa* n. sp. Genitalia of the ♀ paratype. Same scale as figs. 7, 8.

and 60 miles up the Cascapedia Road, Gaspé Peninsula, Quebec; Jefferson Notch and the halfway house on Mt. Washington, White Mountains, New Hampshire; Nordegg and Pocahontas, Alberta. A record from Glens Falls, N.Y. (Forbes, 1954, p. 64) was based on a misdetermined specimen of *conditoides*, which has since been rechecked by genitalic examination (J. G. Franclemont, personal communication).

In the White Mountains, *fabulosa* inhabits the boreal forest of spruce and fir from approximately 3,000 feet to timber line. The Gaspé habitat is similar and has been described (Ferguson and Rupert, 1951, p. 53).

GEOGRAPHICAL VARIATION. The type specimens from New Hampshire are the darkest seen, which suggests that this isolated subalpine population has become a minor race. Those examined from more northern localities in Newfoundland, Labrador and Quebec approach the paleness of true *sincera* a little more closely, but the persistence of a dark hindwing, together with the various other characters described, readily distinguishes the two species.

FLIGHT PERIOD. June 28 to July 2 in New Hampshire, many of the specimens worn even on the earliest date; July 13-14 in Quebec (Gaspé); August 4-5 in Labrador. In the White Mts. it flies almost a month earlier than the average for most of the other species of *Anomogyna* that occur there and appears to be the earliest species of the genus in eastern North America. *A. speciosa*, *perquiritata*, *conditoides* and *imperita* reach their peak in late July. In Jefferson Notch I took *A. atrata* fresh on July 7, 1952, and worn in late July, so the flight period of this species is intermediate.

LIFE HISTORY. A specimen in the Canadian National Collection from Birchy Stream, Newfoundland is supposed to have been reared from a larva on white spruce. The Canadian Forest Insect Survey (Prentice, 1962, p. 113) reports five reared from spruce in Newfoundland and indicates that they overwintered as pupae. Pupal hibernation would seem to be confirmed by the early flight period. Most species of *Anomogyna* are thought to overwinter as larvae.

REMARKS. *Anomogyna fabulosa*, like its European counterpart, is a rare insect in collections. Apart from the New Hamp-

shire series, it is unlikely that any single person has ever collected more than two or three specimens. Virtually all known records are cited in this paper. McDunnough (1921a, p. 84) referred to *fabulosa* in his discussion of the first "authentic" North American *sincera* seen by him, from Labrador, and again in another paper (1921b, p. 177), when he mentioned two Labrador specimens, and single specimens from Nordegg and Pocahontas, Alberta, collected by Kenneth Bowman. One of the two Labrador examples found its way to the United States National Museum (USNM) via the Jacob Doll and William Barnes collections. This is probably the one seen by Smith (1893, p. 59). In both papers cited above McDunnough said that *sincera* was reported from Labrador on the authority of Moeschler, but in a search of the various Moeschler papers on Labrador Lepidoptera in the *Wiener Entomologische Monatschrift* and the *Stettiner Entomologische Zeitung*, I found no reference to the species. The existence of early records is indicated by Draudt's statement (1924, p. 77-78) that "the specimens from Labrador in the coll. Staudinger are on an average smaller with somewhat narrower wings, and in the postmedian area and subcostally dusted somewhat darker than European specimens; the hindwings are also much darker brown. Otherwise the [sic] beautiful species showing distinct markings is unmistakable." I believe that he was comparing them with *A. rhaetica* from the Alps, at that time thought to be conspecific with *sincera*, but even so, the description does not seem to make sense in its mention of the narrower wings and darker postmedian area.

A missionary stationed on the Labrador coast in the 1850's and 1860's, at about the latitude of Nain, was the source of extensive collections received and studied by Moeschler, and this material might very well have included *fabulosa*. I suspect that the specimen in the USNM is one of them.

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